Corps' Buckeye continues to spiral to new heights
By: Karen Roberts, ERDC Public Affairs

Born out of the need for a field-expedient change detection system to aid in spotting improvised explosive devices (IEDs), Buckeye has rapidly evolved from the initial prototype, based on electro-optical (EO) sensing, to a system using both high-resolution EO and Light Detection and Ranging (LIDAR) imagery to produce highly detailed and accurate elevation data for better visualizing the battlefield.

Buckeye is a rapidly fielded, spiral development program of the U.S. Army Engineer Research and Development Center's (ERDC) Topographic Engineering Center (TEC). It has evolved to its current state in just over a year.

Buckeye provides Soldiers with high quality battlefield information through high-resolution imagery; geospatial intelligence; elevation data; intelligence, surveillance and reconnaissance (ISR); and detailed maps of the urban area of interest.

The data produced through Buckeye is available to all of the US Armed Services and intelligence communities via SIPRNET at www.tec.army.smil.mil, or with a DoD common access card at www.tec.army.mil.

The Buckeye system is fully functional today in Iraq. Platform independent, the aerial system operates on a variety of vehicles.

The latest application of the Buckeye system is flying with the newly integrated LIDAR sensor, which creates high-resolution digital elevation models. Currently, the images are quickly compressed, geo-referenced and tied together to form a mosaic. During post processing, the sub-meter resolution color images can be correlated to the LIDAR data to create exceptionally accurate, high resolution 3D maps of cities.

Capt. James E. Richards, Buckeye's program manager, explains these high-resolution maps can be used to help Soldiers visualize threats on the battlefield, conduct mission planning, augment target folders, check on project status for the Army Corps of Engineers reconstruction projects, and gain a better understanding of the urban terrain.

During the recent Iraqi elections, Buckeye was used to help increase security by capturing imagery throughout designated areas.

According to Sgt. Brian Follmer, noncommissioned officer in charge of the ERDC-TEC military support team, "the terrain teams have expressed a lot of excitement over the BuckEye imagery because it's exactly what they need to give them a realistic look as to where features are in relation to the known landmarks instead of struggling through with other imagery. As a terrain analyst, I can see

the immense benefit of BuckEye because from an imagery platform standpoint, it is the best of the best."

Army commanders are recognizing the benefits of having high quality geospatial intelligence prior to executing their missions. Col. Robert Brown, Commander, 1/25th Stryker Brigade Combat Team, was recently quoted as saying, "Mosul, a teeming city of two million, makes it easy for insurgents to hide and build Vehicle-Born Improvised Explosive Devices (VBIEDs) and IEDs out of sight, but we have the highest percentage of found VBIEDS in Iraq, and the highest percentage of found IEDs in Iraq, and that's because we use our assets to see first, before just running into something the way you did in the past."

Similarly, Buckeye is used to improve Soldiers' situational awareness by providing them with highly accurate ortho-rectified imagery at sub-meter resolution that can be used to produce current, high resolution reference graphics and image maps. It provides accurate and high resolution geospatial information for terrain analysis, battlespace visualization, and change detection to assist the warfighter in achieving dominance of the battlefield.

The 30 pound Buckeye sensor suite is currently capable of collecting images over approximately 100 square km per day. Future versions will marry an infrared scanning capability with EO and LIDAR imagery increasing the speed of collection while reducing the weight of the system.

Buckeye information is already being incorporated into the Urban Tactical Planner, an ERDC-TEC product that provides immense geospatial intelligence information through digital representation of the urban environment with capabilities for mission planning and preparation, and 3D fly-throughs.

"Our goal is to see the Buckeye fielded with every Army terrain team to ensure soldiers have the edge they need to win the war," Richards said.